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IN THE APPLICATION

OF

ROGER A. NAYLOR, SR.

AND

ROGER A. NAYLOR, JR.

FOR AN

ILLUMINATED DISPLAY

ILLUMINATED DISPLAY

FIELD OF THE INVENTION

The present invention relates generally to card, picture and sign exhibiting apparatus and,
5 more particularly, to edge illuminated signs.

BACKGROUND OF THE INVENTION

In an effort to speed-up basketball games, the alternating possession rule, which puts the ball in play with a throw-in rather than a jump ball, has been adopted by most basketball leagues.
10 The rule is invoked in jump ball situations other than at the start of each half and any extra periods and alternates the team taking possession of the ball for throw-in at the spot nearest to where a jump ball situation occurs. The team that does not obtain control of the initial jump ball for each half or extra period will start the alternating process by being awarded the ball for throw-in. The alternating possession procedure starts when an official places the ball at the
15 disposal of a player for a throw-in and ends when the passed ball touches an inbound player or when the throw-in team commits a violation.

The team to be awarded the ball for the alternating possession throw-in is shown by an alternating possession indicator having at least one arrow that is usually kept on an officials' table beside the basketball court. Some of these indicators are little more than cardboard signs
20 while others are more elaborate affairs illuminated by light bulbs that make them more easily seen by officials, coaches, players and spectators. Reversing the direction of the arrow immediately after the alternating possession throw-in ends is often difficult because the bulky

nature of the existing indicators impedes the view of the action on the court for courtside officials.

SUMMARY OF THE INVENTION

5 In light of the problems associated with the known indicators for showing entitlement to possession of a ball on a basketball court, it is a principal object of the invention to provide a display having selectively illuminated possession arrows and a small size so as to not take up too much room on a courtside table. Much of the display is transparent so that a view of events on the court is not blocked for officials sitting at the table.

10 It is another object of the invention to provide a display of the type described that provides illuminated possession arrows that are easy to see from great distances. Each arrow is "doubled" with an inner part surrounded by an outer part to maximize light output. Further, each arrow is fully framed, top, bottom and sides by light emanating from the periphery of the display when an arrow is illuminated.

15 It is a further object of the invention to provide an illuminated display that is easy to set up and take down, requiring neither tools nor prolonged training to accomplish the task. The illuminated display is also believed to be intuitive to use.

 It is an object of the invention to provide improved elements and arrangements thereof in an illuminated display for the purposes described that is lightweight in construction, streamlined
20 in appearance, inexpensive to manufacture, and dependable in use.

 Briefly, the illuminated display in accordance with this invention achieves the intended objects by featuring a base and a pair of waveguides extending upwardly from the base. The

waveguides are transparent plastic plates abutted end-to-end with the bottoms thereof positioned within the base. Each of the waveguides is provided with a recessed arrow pointing outwardly. A mirrored strip is sandwiched between the waveguides. A pair of arrays of LEDs is positioned within the base adjacent the bottoms of the waveguides. Either of the arrays of LEDs can be selectively energized to illuminate a respective one of the waveguides.

The foregoing and other objects, features and advantages of the present invention will become readily apparent upon further review of the following detailed description of the preferred embodiment as illustrated in the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention may be more readily described with reference to the accompanying drawings, in which:

FIG. 1 is a perspective view of an illuminated display in accordance with the present invention.

FIG. 2 is a top view of the illuminated display of FIG. 1 with portions broken away to reveal details thereof.

FIG. 3 is a side view of the illuminated display with portions broken away to reveal details thereof.

FIG. 4 is a diagrammatic view showing light emissions from the illuminated display.

FIG. 5 is an electrical circuit diagram for the illuminated display.

Similar reference characters denote corresponding features consistently throughout the accompanying drawings.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the FIGS., an illuminated display in accordance with the present invention is shown at 10. Display 10 includes a pair of waveguides 12, 14 supported side-by-side by a hollow base 16, separated only by a thin, mirrored strip 18. Each of the waveguides 12, 14 is provided with an arrow 20, 22 that points outwardly and away from strip 18. A pair of light sources 24, 26 is positioned within base 16 beneath waveguides 12, 14 that can be selectively energized to illuminate either of waveguides 12, 14 so that one of arrows 20, 22 is made visible at a great distance.

Waveguides 12, 14 comprise rectangular plates of transparent Plexiglas or like material capable of transmitting light from an adjacent source to all of its corners without substantial diminishment. The peripheries 28, 30 of waveguides 12, 14 and arrows 20, 22 are frosted by physical or chemical means to have a translucent character wherein light passes through the surfaces but is diffused so that objects on the other sides cannot be distinguished. Except for peripheries 28, 30 and arrows 20, 22, an observer 32 can readily see through waveguides 12, 14 when looking from front to back or vice versa. When illuminated, peripheries 28, 30 brightly frame arrows 20, 22 in light.

Waveguides 12, 14 are provided with opposed grooves 34 along their bottoms for receiving the free ends of arcuate walls 36 defining the front, back and top of base 16. The sides of waveguides 12, 14 located beneath grooves 34 are covered by a reflective material 38 that serves to minimize the leakage of light that has entered waveguides 12, 14 from light

sources 24, 26 back into base 16. Material 38 can include the protective paper attached to Plexiglas by a light-tack adhesive at the time of its manufacture.

Each arrow 20, 22 has an inner part 40 and an outer part 42 that serves as a frame for inner part 40 for maximum visibility. Parts 40, 42 are equilateral triangles having linear top segments 44a, 44b, linear bottom segments 46a, 46b and linear side segments 48a, 48b connected at top corners 50a, 50b, bottom corners 52a, 52b and side corners 54a, 54b. Side segments 48a, 48b, forming the innermost sides of the triangles, are set vertically so that triangular parts 40, 42 appear to be pointing outwardly away from strip 18.

Arrows 20, 22 are formed by routing them into the fronts of waveguides 12, 14 so that such are recessed therein. Preferably, segments 44a-48a and 44b-48b have triangular cross sections capable of capturing light moving within waveguides 12, 14 and passing such to a remote observer 32 in a focused manner. When illuminated, arrows 20, 22 stand out brightly against the transparent fronts and backs of waveguides 12, 14.

Reflective strip 18 comprises an opaque, metallic film having a mirror-like finish and a light tack adhesive on one of its sides. In use, the adhesive is pressed against the inner end of either waveguide 12 or 14 and, then, waveguides 12, 14 are pressed together protecting strip 18 from wear. The joint between waveguides 12, 14 is covered by a strip of opaque, adhesive tape 56 extending up one side of the joint and down the other. When extended as described, strips 18 and 56 form an I-shaped configuration that serves to direct light from the inner edges of waveguides 12, 14 to observer 32 with an intensity that is substantially the same as that of illuminated periphery 28 or 30. Strip 56 is preferably white in color to maximize the reflection of light therefrom to the observer.

Base 16 includes a tubular portion 58 that is closed at its opposite ends by caps 60 and sits on leveling pads 62. Tubular portion 58 is semi-cylindrical in form having a planar bottom wall 64 with a pair of arcuate walls 36 arcing upwardly and inwardly from the front and back of bottom wall 64 toward one another. As shown, the tops of walls 36 define a slot 68 into which waveguides 12, 14 are placed end-to-end with the tops of walls 36 snugly positioned within grooves 34. Waveguides 12, 14 are prevented from sliding outwardly from slot 68 by caps 60 attached in a suitable manner to the ends of tubular portion 58.

Extending upwardly from bottom wall 64 is a pair of rails 70 that define a slot 72 between one another. A circuit board 74 carrying light sources 24, 26 is snugly positioned within slot 72 and extends beneath both waveguides 12, 14. Circuit board 74 is prevented from sliding from the ends of slot 72 by caps 60.

Light sources 24, 26 comprise arrays of light emitting diodes (LEDs) that are known for their high light output, minimal heating and low energy consumption. Each of the LEDs is connected to one terminal 76 of a socket 78 mounted on a cap 60. Electrical leads 80, 82 extend in parallel fashion from light sources 24, 26 and terminate at contacts 84, 86 of a 3-position toggle switch 88 carried by a controller body 90. A toggle 92 connects either or neither contact 84 or 86 with an electrical lead 94 that terminates at a second terminal 96 of socket 78. Together, leads 80, 82 and 94 are bundled as a cable 98 between base 16 and controller body 90.

LEDs are powered by a conventional AC to DC transformer 100 having a plug 102 for insertion into a wall socket (not shown) forming part of an electrical grid. A pair of leads 104, 106, bundled as a cable 108 extending from transformer windings 110 in housing 112,

ends in a pair of terminals 114, 116 of a plug 118 adapted for insertion into socket 78. When inserted therein, terminals 96 and 114 are electrically connected together as are terminals 76 and 116. Provided that sufficient electrical current is obtained from the electrical grid, either of light sources 24, 26 can be energized and illuminated by manipulation of toggle 92.

5 When light source 22 is illuminated, light passes upwardly through the bottom of waveguide 12 where it is reflected back and forth until it escapes. Much of this light is captured by arrow 20 as discussed above and directed to remote observer 32. Other light rays, illustrated schematically at 120 and 122 in FIG. 4, impact frosted periphery 28, specifically the top and outer end of waveguide 12, where they are reflected to an observer 32 who sees
10 periphery 28 being brightly lit. Because observer 32 is positioned to the right of strips 18, 56 in FIG. 4., light impacting strips 18, 56 will be reflected away from him, but the area around strips 18, 56 is still seen to glow brightly due to inherent characteristics of the material comprising waveguide 12.

 Illumination of light source 24 causes the same lighting effects within waveguide 14 as
15 are created within waveguide 12 by the illumination of light source 22. Illustrated in FIG. 4 is a light ray 124 that is seen to reflect from tape 56 and strip 18 to observer 32 giving the impression that the inner edge of waveguide 14 is brightly illuminated. Simultaneously, light ray 126 hits a portion of periphery 30, i.e., the frosted outer end of waveguide 14, where such is reflected to the observer 32 who sees such as being brightly lighted.

20 It is anticipated that display 10 will be employed by officials at basketball games to indicate rightful possession of the ball on a basketball court during game play. With arrows 20, 22 pointing toward the basket of the team that is to take the next possession of the ball in

accordance with the rules of the game. In use, an illuminated arrow 20, 22 is easily seen by players, coaches, referees and spectators. Attention is called to arrows 20, 22 by the fully illuminated periphery of waveguides 12, 14 which serve as frames for arrows 20, 22 and the “doubled” nature of arrows 20, 22 themselves with outer parts 42 framing inner parts 40.

5 Since waveguides 12, 14 are transparent, the view of the basketball court by operator of display 10 is never substantially impeded. Of course, by providing cable 98 with a great enough length, the operator of display 10 does not need to sit particularly close to display 10.

When a basketball game has been completed, display 10, controller body 90, and transformer 100 can be easily gathered together for storage in the trunk of a car, a closet or
10 even a gym bag. Since display 10 and its ancillary components are light in weight, they are easily transported about and are always ready for reuse.

While the invention has been described with a high degree of particularity, it will be appreciated by those skilled in the art that modifications may be made thereto. Therefore, it is to be understood that the present invention is not limited to the sole embodiment described above,
15 but encompasses any and all embodiments within the scope of the following claims.